

## LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. **(Currently amended)** A functional TGF- $\beta$  family fusion protein, comprising:  
a functionalizing peptide ~~portion~~tag of no more than about 100 amino acids for detecting, quantifying or providing a specific additional function to the fusion protein; and  
a mature TGF- $\beta$  family protein, or ~~a variant or fragment thereof~~an amino acid sequence that has ~~having~~ at least 85%95% sequence identity with the mature TGF- $\beta$  family protein and which retains TGF- $\beta$  family protein activity;  
wherein the functionalizing peptide tag is inserted between a pair of adjacent residues between about residues 1 and 22 of the mature portion of the TGF- $\beta$  family protein;  
and wherein the activity of the TGF- $\beta$  fusion protein is reduced by no more than 50% as compared to the mature TGF- $\beta$  family protein.
2. **(Original)** A functional TGF- $\beta$  family protein dimer formed by the association of two of the fusion proteins of claim 1.
3. **(Original)** The dimer of claim 2, wherein the dimer is a homodimer.
4. **(Currently amended)** The dimer of claim 2, made by a process comprising:  
expressing a nucleic acid molecule in a eukaryotic cell to produce a monomer fusion protein, wherein the nucleic acid molecule comprises:  
a sequence encoding the functionalizing peptide ~~portion~~tag;  
a sequence encoding the mature TGF- $\beta$  family protein; and  
a sequence encoding a pro-region (latency associated peptide) of the TGF- $\beta$  family protein, located to provide targeting and/or assembly and/or processing of the fusion protein encoded for by the nucleic acid.
5. **(Original)** The dimer of claim 4, wherein the process further comprises:

associating two monomer fusion proteins to form the dimer.

6. **(Currently amended)** The dimer of claim 4, wherein the sequence encoding the pro-region is located upstream to both the sequence encoding the functionalizing peptide ~~portion~~ tag and the sequence encoding the mature TGF- $\beta$  family protein.

7. **(Original)** The dimer of claim 4, wherein the process further comprises:  
cleaving the pro-region (latency associated peptide) from at least one fusion monomer.

8. **(Original)** The dimer of claim 4, wherein the process further comprises:  
cleaving the pro-region (latency associated peptide) from both fusion monomers.

9. **(Currently amended)** The fusion protein of claim 1, wherein the functionalizing peptide ~~portion~~ tag is at the N-terminus inserted downstream of residue five of the mature TGF- $\beta$  family protein.

10. **(Original)** The fusion protein of claim 9, wherein the mature TGF- $\beta$  family protein is TGF- $\beta$ 1.

11. **(Currently amended)** The fusion protein of claim 10, where the protein comprises the amino acid sequence as in ~~SEQ ID NO: 11, SEQ ID NO: 15, the mature portion of SEQ ID NO: 33, the mature portion of SEQ ID NO: 35, the mature portion of SEQ ID NO: 39, the mature portion of SEQ ID NO: 37, or conservative substitutions thereof.~~

12. - 17. **(Canceled)**

18. **(Original)** The fusion protein of claim 1, further comprising a pro-region (latency associated peptide) of the TGF- $\beta$  family protein located to provide targeting and/or assembly and/or processing of the fusion protein.

19. **(Original)** The fusion protein of claim 18, wherein the pro-region is located at the N-terminal region of the fusion protein.

20. and 21. **(Canceled)**

22. **(Original)** The fusion protein of claim 1, wherein the mature TGF- $\beta$  family protein is TGF- $\beta$ 1.

23. - 27. **(Canceled)**

28. **(Currently amended)** The fusion protein of claim ~~25~~1, wherein the tag is an epitope tag, a purification tag, or an identification tag.

29. **(Currently amended)** The fusion protein of claim ~~25~~1, wherein the tag comprises a FLAG tag, a c-myc tag, a 6x His tag, a HA tag, a Tat tag, a T7 tag, a GFP peptide, or a GST peptide.

30. **(Currently amended)** An isolated nucleic acid molecule encoding a fusion protein of claim 1, ~~or a conservative substitution thereof.~~

31. **(Currently amended)** The isolated nucleic acid molecule of claim 30, comprising a sequence selected from the group consisting of: comprising

- ~~\_\_\_\_\_~~ (a) nucleic acid residues 835 to 1197 of SEQ ID NO: 8;
- ~~\_\_\_\_\_~~ (b) SEQ ID NO: 10;
- ~~\_\_\_\_\_~~ (c) residues 835 to 1197 of SEQ ID NO: 12;
- ~~\_\_\_\_\_~~ (d) SEQ ID NO: 14;
- ~~\_\_\_\_\_~~ (e) residues 845-1222 of SEQ ID NO: 32;
- ~~\_\_\_\_\_~~ (f) residues 849-1226 of SEQ ID NO: 34;
- ~~\_\_\_\_\_~~ (g) residues 845-1234 of SEQ ID NO: 36;
- ~~\_\_\_\_\_~~ (h) residues 845-1234 of SEQ ID NO: 38;

and

~~(i) conservative variants of any one of (a) through (h).~~

32. **(Original)** The isolated nucleic acid molecule of claim 30, further comprising a sequence encoding a TGF- $\beta$  pro-region.

33. **(Currently amended)** The isolated nucleic acid molecule of claim ~~30~~32, comprising a sequence ~~selected from the group consisting of:~~comprising

~~(a) SEQ ID NO: 8;~~

~~(b) SEQ ID NO: 12;~~

~~(c) SEQ ID NO: 32;~~

~~(d) SEQ ID NO: 34;~~

~~(e) SEQ ID NO: 36; and~~

~~(f) SEQ ID NO: 38.~~

34. **(Original)** A recombinant nucleic acid molecule comprising a promoter sequence operably linked to the isolated nucleic acid molecule according to claim 30.

35. **(Original)** A transgenic cell comprising a recombinant nucleic acid molecule according to claim 34.

36. **(Original)** The transgenic cell of claim 35, wherein the cell is a bacterial cell or an eukaryotic cell.

37. **(Original)** The eukaryotic cell of claim 36, wherein the cell is a yeast cell or a mammalian cell.

38-48. **(Canceled).**

49. **(Currently amended)** A purified functional TGF- $\beta$  fusion protein, comprising an amino acid sequence ~~selected from the group consisting of:~~comprising

~~(a) SEQ ID NO: 9;~~

- ~~— (b) SEQ ID NO: 11;~~
- ~~— (c) SEQ ID NO: 13;~~
- ~~— (d) SEQ ID NO: 15;~~
- ~~— (e) SEQ ID NO: 33;~~
- ~~— (f) SEQ ID NO: 35;~~
- ~~— (g) SEQ ID NO: 37;~~
- ~~— (h) SEQ ID NO: 39;~~
- ~~— (i) sequences having 85% sequence identity to any one of (a) through (h);~~
- and
- ~~— (j) conservative substitutions thereof.~~

50. **(Original)** An isolated nucleic acid molecule encoding the protein of claim 49.

51. **(Original)** A recombinant nucleic acid molecule comprising a promoter sequence operably linked to the nucleic acid molecule of claim 50.

52. **(Original)** A transgenic cell comprising the recombinant nucleic acid molecule according to claim 51.

53. - 56. **(Canceled).**

57. **(New)** The functional TGF- $\beta$  family fusion protein of claim 1, wherein the mature TGF- $\beta$  family protein is a mammalian TGF- $\beta$  isoform.

58. **(New)** A TGF- $\beta$  family fusion protein, comprising:  
a N-terminal region consisting of an amino acid sequence of a pro-region (latency associated peptide) of a TGF- $\beta$  family protein,  
a functionalizing peptide tag of no more than about 100 amino acids; and  
an amino acid sequence consisting of the mature portion of the TGF- $\beta$  family protein;

wherein the functionalizing peptide tag is inserted between a pair of adjacent residues between about residues 1 and 22 of the mature portion of the TGF- $\beta$  family protein;

and wherein the portion of the fusion protein comprising the mature portion of the TGF- $\beta$  family protein and the functionalized peptide tag has a TGF- $\beta$  family protein activity that is reduced by no more than 50% as compared to the mature TGF- $\beta$  family protein alone.